

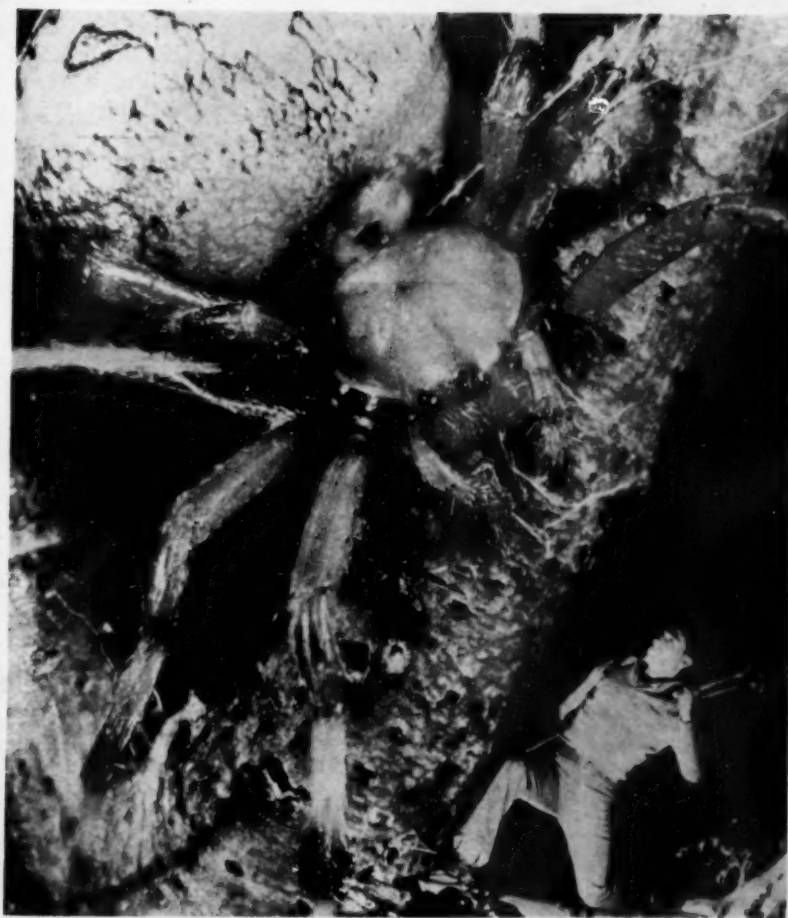
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JUN 19 1934

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



JUNE 16, 1934

Photographer's Nightmare

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A

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Summary of Science

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DO YOU KNOW?

Cotton is grown in more than sixty countries.

In one family, 37 pairs of twins were recorded in five generations.

Government experiments have been made to find the best quality of paper for making books for the blind in raised Braille type.

An applause-meter has been devised and used experimentally to gauge the popularity of actors in amateur theatrical contests.

Experiments at the Coal Research Institute at Mühlheim have progressed so far that a large plant for the liquefaction of coal is to be erected in the Ruhr district.

A complete library of literature on the potato is the aim of L. T. Dennison, plant specialist of Pennsylvania State College, whose collection includes some of the earliest books on the potato.

Diesel locomotives are to be given a trial in India.

Eskimo children have a greater variety of toys than children of Indian tribes, says Dr. Paul S. Martin, archaeologist.

A British expedition will make archaeological studies in Burma and Siam, in a region which may shed new light on early civilization.

Improved oil burning refrigerators are attracting interest in small towns and on farms in the Dakotas where electricity is not available.

The propagation of diamond-back terrapin by the U. S. Bureau of Fisheries in North Carolina is reported to be very successful this year.

At the Hot Springs National Park, Arkansas, both hot and cold water flow from the same formations and under similar geological conditions.

WITH THE SCIENCES THIS WEEK

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What is the main article of diet in Mexico? p. 372.

ARCHAEOLOGY

How did the Hittites beautify their goddesses? p. 371.

How did the Mayas beautify their smiles? p. 381.

How is the mountain of Aegina thought to predict rain? p. 375.

What rare treasure was mistaken for coffin handles? p. 376.

BOTANY

What can you do for ivy poisoning? p. 381. *Rhus Dermatitis*—James B. McNair—Univ. of Chicago, 1923, \$4.

CHEMISTRY

What gas is found both in distant stars and in street signs? p. 376.

CONSERVATION

What use of the airplane is banned in Africa? p. 380.

DENTISTRY

How can radio jazz remove the pain from dentistry? p. 377.

ECOLOGY

Why do native plants survive droughts? p. 373. *The Plant in Relation to Water*—N. A. Maximov—Macmillan, 1929, \$6.50.

ENGINEERING

How can engine odor be avoided in an automobile? p. 380.

What is the hardest metallic substance? p. 377.

ENTOMOLOGY

What regions are badly hit by grasshoppers? p. 383.

EUGENICS

Which trait of man has the greatest importance biologically? p. 377.

FORESTRY

What is the latest menace to the trees of New England? p. 377.

MEDICINE

What good are tonsils? p. 376.

What is used for protection against infantile paralysis? p. 376. *Communicable Disease Control—White House Conference on Child Health and Protection—Century, 1931, \$2.25.*

PALEONTOLOGY

Next to the whale, what was the largest mammal that ever lived? p. 375.

PHOTOGRAPHY

How long did it take to build the largest precision camera? p. 372.

PHYSICS

How can the existence of element No. 93 be verified? p. 371.

To what practical use may transmutation be put? p. 372.

PHYSIOLOGY

Does reduction of sleep affect the higher mental centers? p. 383.

Why can't a spider grow as big as a horse? p. 378. *The Biology of Insects*—George H. Carpenter—Macmillan, 1928, \$6.50.

PSYCHOLOGY

What has the rapid flow of milk to do with the future habits of an infant? p. 376.

Do quintuplets necessarily look alike? p. 379.

PUBLIC HEALTH

What disease is confused with appendicitis? p. 382.

These curiosity-arousing questions show at a glance the wide field of scientific activity from which this week's news comes. Book references in italic type are not sources of information for the article, but the references for further reading. Books cited can be supplied by Book Department, Science News Letter, at publishers' prices, prepaid in the United States.

PHYSICS

Italian Discovery May Be First of Super-Elements

No. 93, Reported by Fermi, May Be Unstable Element Thought Impossible Only a Few Years Ago

HAS a super-uranium, the first of a series of elements heavier than the recognized 92 chemical building blocks, been discovered?

Scientists are wondering as a result of the report that Dr. Enrico Fermi, brilliant 32-year-old physicist of Rome's Royal University, by atomic bombardment has created artificially a new element, No. 93. He bombarded uranium, heaviest of elements, with the non-electrical particles known as neutrons.

Element No. 93 makes a bid for recognition as the result of this year's fast-moving development in knowledge of the atom's interior which began with the discovery of artificial radioactivity.

Uranium is the heaviest element found in nature, being 238 times as dense as hydrogen, the lightest. For many years it was thought to be the limit of all the possible elements but recently Sir Arthur Eddington and other theoretical scientists have calculated the maximum number of possible elements as 136. Element No. 93 of Dr. Fermi, if its reality is substantiated by competent investigators working independently, may be the first of the super-heavy substances lying beyond uranium in the gamut of chemical elements.

Opinion among American physicists regarding Dr. Fermi's discovery indicates that if still heavier elements are found they will be transitory substances breaking down like the naturally radioactive elements such as radium but probably much faster. For the provisional element No. 93 it is reported to take only $13\frac{1}{2}$ minutes for the initial quantity of the element to "decay," or disintegrate, to half the amount.

Differs From Earlier Research

On what proof Dr. Fermi bases his report on the actuality of element No. 93 is still unannounced. In his recent communication to the British scientific journal, *Nature*, however, he cites twenty-three cases where he had been able to produce artificial radioactivity in a variety of elements with the same ap-

paratus he employed for creating element No. 93. In recounting his work Dr. Fermi told of observing negative charges of electricity—electrons—being giving off as the man-made radioactive substances decayed away. Thus he differed with the earlier research of Irene Curie and Prof. F. Joliot of Paris who have observed particles of positive electricity—positrons—being omitted in the process.

The atomic happenings which might account for the creation of the new element out of uranium are still a subject of debate and conjecture among scientists. One possible occurrence might be that the neutrons used by Dr. Fermi (consisting, if they do, of a positive particle, the proton, and a negative charge, the electron) might break into two parts on impact with the nuclei of the uranium atoms. The proton might embed itself within the uranium nucleus and so increase the weight of the atom to No. 93 while the electron part of the neutron would be given off in the process and be detectable either with electrical instruments known as Geiger counters or by photographing the electron tracks in a Wilson cloud chamber.

Not Verified With Spectrograph

The best way to determine whether the new element No. 93 really exists would be to weigh it on the atomic "scales"—the mass spectrograph. It does not appear that this crucial test has been applied in Dr. Fermi's work for no mention was made of the method.

What amazes American scientists regarding Dr. Fermi's experiments is that his source of bombarding neutrons is comparatively weak. In a small glass tube the Italian scientist placed beryllium and the radioactive gas, radon, given off by radium as it breaks up. The action of the radon on the beryllium caused swift-moving neutrons to come off which struck a nearby bit of uranium. About 100,000 neutrons were liberated in this (Turn to Next Page)



Courtesy Eustache de Lorey, Paris.

ADORED BY THE HITTITES

A rare figure of a goddess of the Hittites—or so she is believed to be—shows us in person the sort of divinity that so distressed Hebrew prophets of the Bible. Once worshipped by adoring eyes, the goddess is now gazed at critically by visitors in the Worcester Art Museum, where she is an important "loan" from Paris.

ARCHAEOLOGY

Hittite Goddess Shows No Classic Beauty

A PLAIN little figure is a goddess who has sailed across the seas to show Americans the sort of divinity worshipped by the Hittites, 1400 B. C.

The sculptor who made her thought arms and legs unimportant. He merely sketched in a suggestion of a robe or dress. But he gave careful attention to a coiffure, with hair parted in the middle and rolling down ending in long locks on either side of the head. Around the neck, bands placed high and low, resemble the curls in technique, but may be ornaments. The staring hollow eyes probably shone with jewels, once, but even bejeweled the goddess has little of the alluring charm that our imaginations might conjure up when we think of the heathen gods of the Bible lands.

Not so long ago, the Hittites were thought of vaguely as one of the enemies of the Children of Israel, named in the Bible. They are now known as important people of northern Syria and Asia Minor.

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fashion each second. In America sources of neutrons have been developed which are capable of giving off 100 times this number per second.

It is only since the beginning of 1934 that the technique of creating artificial radioactivity in normally stable elements has been known to the world of science. On January 31 Irene Curie (daughter of Madame Curie, discoverer of radium) and her husband, F. Joliot, announced that by bombarding the elements boron, magnesium and aluminum with the heavy cores of helium atoms they were able to create transitory radioactive forms of nitrogen, silicon and phosphorus.

Substantiation of the Curie-Joliot experiments followed swiftly from the Cavendish Laboratory at the University of Cambridge, England, and from the California Institute of Technology and the University of California. In England the favorite atomic bombarding particles have been the cores of hydrogen atoms—the protons. In the California experiments the cores of the

new heavy hydrogen—the deuterons—have been driven at a variety of elements to produce artificial radioactivity.

Work prior to that of Dr. Fermi on the creation of artificial radioactivity has all been accomplished by using relatively light-weight elements as targets. That the same phenomena could be produced in the heaviest and most complicated atom of all, uranium, was unknown. For uranium, and the whole series of elemental offspring which finally ends when lead is reached, it was known that natural radioactivity was occurring, with the elements gradually turning into substances of slightly less weight. Many experiments seemed to indicate that nothing man could do would change the rate at which the natural disintegration occurred, either to slow it down or speed it up. If Dr. Fermi's work on the creation of element No. 93 is substantiated later by other scientists it will be the first case where the sequence of natural radioactivity change has been altered.

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PHYSICS

Transmutation May Yet Be Put to Practical Uses

By DR. R. M. LANGER, Physicist,
California Institute of Technology.

IF THE process of making heavier radio-active elements out of lighter ones, reported discovered by Prof. Enrico Fermi in Italy, can be made efficient enough it may lead to a practical method of creating useful radioactive substances for medical purposes or scientific study.

When neutrons strike the nucleus of a light element they try to make trouble by kicking out an alpha particle or helium atom core. If this proves too difficult they bounce out themselves.

Never in the past have they been found to join the nucleus in peace. Still, physicists have felt that in the stars or wherever else matter is built up many such peaceful unions must take place.

Now the Italian physicist, Fermi, reports he has made neutrons stick to the heaviest element known, namely, uranium, which has almost 238 times the mass of hydrogen, the lightest element. If this proves true a new element will

have been formed heavier than any known heretofore.

The heavy product seems to shake off an electron and this causes it to break the record for highest nuclear charge, namely 93. It may be that one of the lighter forms of uranium is attacked. In this case the mass would be only 235 but the nuclear charge would still be 93.

Apparently this process may be very efficient because the uranium nucleus is so heavy, large and complex that the neutron can fritter away its excess energy within the uranium and then be too exhausted to leave. After a few seconds an electron leaves instead and then the fun begins. For the new element is radioactive and keeps changing by sending out alpha, beta and gamma rays until lead is formed.

The first problem that the new experiments are likely to solve is the old mystery of the source of the actinium series. Apparently nature has been doing slowly what Prof. Fermi just learned to do rapidly.

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PHOTOGRAPHY

Largest Precision Camera To Copy Charts

THE WORLD'S largest precision camera, 31 feet long and weighing 14 tons, so big that its operators work inside of it, has just been placed in operation for reproducing nautical charts and airway maps more than 4 feet square.

So precise is the work of this huge camera, which resembles a railway trestle in structure, that cork pads and other vibration-damping provisions must be used to eliminate the slightest building tremors, although it has been installed directly on the foundations of the new Department of Commerce building.

Capt. R. S. Patton, director of the U. S. Coast and Geodetic Survey, states that this gigantic instrument will make it possible to photograph a complete chart on one negative, with a probable error of not more than two-thousandths of an inch. Two years were devoted to its design, construction and adjustment, at a total cost \$15,240. Copyboards weighing a ton slide easily along steel tracks and do not spring the frame more than one hundredth of an inch.

In order to get the greatest accuracy possible every available source of information was consulted from the designs of commercial copying cameras to reports of technical experts at the National Bureau of Standards. The preliminary designs were made at the Sight Shop of the Naval Gun Factory.

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AGRICULTURE

Mexico Seeks Wheat To Grow in Tropics

AN AGRICULTURAL experiment station in the hot lowlands of Guerrero, Mexico, is trying out several kinds of wheat to see if some of them might not be adaptable to the tropics. Mexico lives on corn, a grain biologically less efficient than wheat.

Although the mountain highlands raise wheat, white bread is a luxury to Indians.

Experiments with different varieties of wheat are being made on the high central plateau to improve present production in wheat raising areas. The Japanese soy bean is being tested for Mexican adaptability. Because of its high protein value this bean might serve to supplement the inefficient native diet.

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ECOLOGY

Native Plants Feel Drought

Tree Leaves Small; Wildflower Blossoming Forced; "Crop Failure" Looms for Some Wild Plants

DROUGHT is taking its toll of wild plants as well as of cultivated crops, but on the whole it is hurting the wild plants less. This is true whether the plants are native grasses, other herbs, or trees. Their longer roots reach to lower soil levels where there is still available moisture, and thus they survive while the shorter-rooted introduced crop plants, which are less well adapted, perish.

This is the consensus of telegraphic reports obtained by Science Service from half-a-dozen well-known botanists occupying strategic points in the prairie region of the Midwest. There the drought is now reaching its most critical stage, after burning out the small grains and pastures in the Dakotas and other Great Plains farming regions to the west. Present drought conditions were ascertained in Oklahoma, Nebraska, Iowa, Minnesota, Illinois and Ohio.

The greater drought-resisting powers of native plants may be of considerable practical interest in future agricultural planning for drought-labile regions, particularly in view of Secretary of Agriculture Wallace's repeated recommendation that excess grain acreage should be put into permanent grass. Especial point is given by the fact that where grasses have been drought-killed, the introduced shorter-rooted species have always perished first, while the deep-rooted native plants survive.

Native trees in the drought area also have been able to "take it" with greater endurance than have planted trees in groves and along streets. Some of the latter have died, but relatively few native trees have been killed, and those only in the more exposed places. Even native trees, however, are not escaping unscathed. In general, their leaves are smaller and scantier this year than normal.

Early spring flowers in the woods had their blossoming season forced, rushing through flowering and seed production from two to three weeks ahead of their usual dates. Many plants of later spring and early summer have suffered an apparent "crop failure": they have been dwarfed and are improv-

erished-looking, and have either failed to blossom or to produce seed. Some of the shallower-rooted wayside weeds are already dead.

Underground, the available moisture which serves plants for life and growth is slowly ebbing to deeper and deeper levels, as the desperate roots suck the last drops out of the upper soil. When the level of available moisture sinks beneath the deepest root-point of any given plant, that plant is doomed. In drought, the survival of the fittest means, to a very large extent, the survival of the deepest-rooted.

Nebraska: Roots Determine

The moisture-bankruptcy of the soil is, of course, very unevenly distributed. In general, however, it is most severe where the midwestern prairies merge upon the Great Plains, becoming less menacing toward the eastern prairie borders.

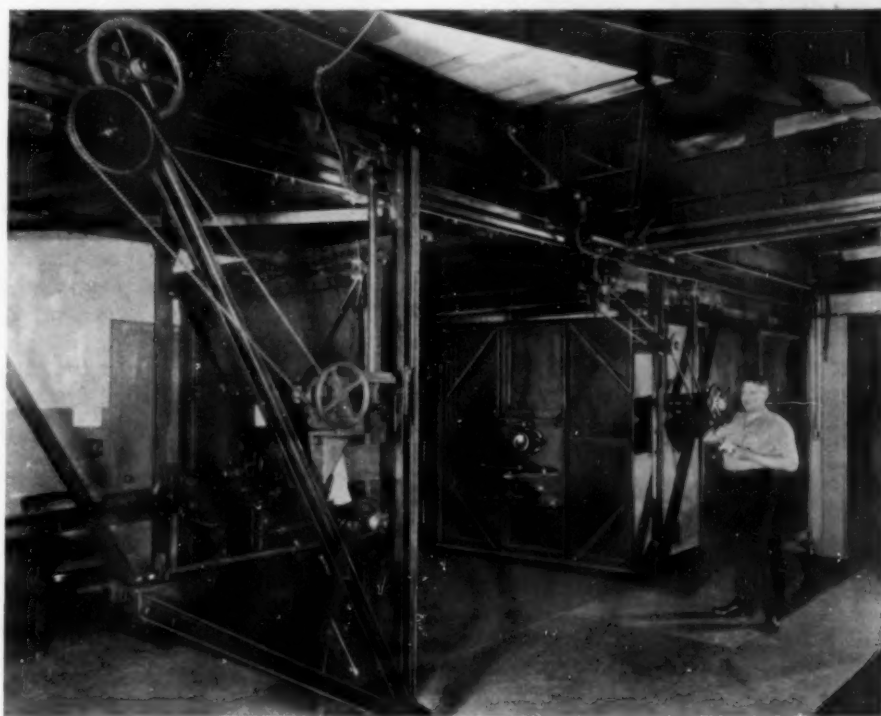
Native prairie grasses with roots four to ten feet deep have withstood continuous drought from April until the present time, Prof. J. E. Weaver, Lawrence Stoddart and William Noll, of the University of Nebraska, report.

Now, however, folded and rolled leaves are appearing on these grasses, in upland habitats.

Other prairie plants are showing the effects of the drought largely in proportion to the length of their roots. A shallow-rooted species of "everlasting," or "ladies' tobacco," is completely dried. Contrasted with this are a wild rose and two other prairie plant species with roots twelve to twenty feet deep, which are quite unharmed.

Another striking contrast appears between two sister species of the brilliant-flowered plant known as the blazing star. One, with taproots boring into the soil for seventeen feet, is still thriving; its relative, with shallow roots, is wilted and dying.

Available water in the soil has decreased markedly in the last two months.



GIANT CAMERA

This structure, not unlike a railway trestle, is a camera capable of great precision allowing the Coast and Geodetic Survey to reproduce chart revisions so accurately that they fit precisely into place on the chart of a survey. The plate-holding end is made into a darkroom so that the huge negatives can be exposed and developed without plateholders.



LIGHTNING

an address by

Dr. B. F. J. Schonland

Of Cape Town University
Cape Town, South Africa

Wednesday, June 20, at 3:30
p. m., Eastern Standard
Time, over Stations of the
Columbia Broadcasting Sys-
tem. Each week a prominent
scientist speaks over the
Columbia System under the
auspices of Science Service.

In the Carrington loam, a Central Nebraska soil type, there was in April 24 per cent. of available moisture in the top foot of soil. Now there is no available moisture at all to a depth of eighteen inches. Nevertheless, there are no cracks in this soil, as there are in cultivated fields, and from five to eight per cent. of available moisture can be found down to and beyond the six-foot depth.

The water content of the commonest upland grass was 80 per cent. on May 1, and is down to 48 per cent. now. Other species show similar declines.

The osmotic pressure of the cell sap of this grass, which is a means of measuring its "thickness," increased from nine atmospheres on May 1 to 12 on May 15. On May 24 it was 25 atmospheres, and on June 5 it reached 38. Grama grass sap shows osmotic pressures of from 21 to 49 per cent. The highest previously recorded pressure during drought was 30 atmospheres.

But when parched areas are given water the plants recover quickly, showing their great resistance to drought.

Iowa: Half-Size Plants

Some 25 native prairie plant species, growing on a still unplowed fragment of the old original prairie, were found to be dwarf, feeble and sterile, by Prof. H. S. Conard of Grinnell College. Yet none were killed out. Adjacent to this patch were other prairie plants, doing a little better: such typical prairie species as lead-plant, tickseed and cone-flower were only half size, but in bloom. Wild roses were normal. In a dry pasture there was abundant wild verbena in bloom, though again only half size, and nothing else growing at all. The

least advantage of slope or exposure shows plainly, Prof. Conard noted. All plants are much ahead of the season.

The leaves of trees in central Iowa show various responses to the drought. Native species are not dying, unless they were previously diseased. Planted white pine and arbor vitae, however, are mostly dead, and fir and spruce show injury. Walnuts have only half the usual number of leaves, and those only half the usual size. Elm leaves are thin, black oak leaves very thin. But oak, however, which is the typical dry-land oak of the prairies, has normal leaves. Surprisingly, several cypresses growing on the Grinnell College campus are thriving, though their normal habitat is swampy soil.

At Eldora, in northeastern Iowa, Prof. Conard found sugar maples dried down to a fourth of their normal foliage. There were many dead birches, and the white pine, which here reaches the southwestern limit of its natural range for the United States, was looking sickly.

Under the trees, hepaticas were growing, but only to half size. Ferns were few, but nearly normal. Mosses were bone dry, but probably still alive, for mosses are hard to kill.

Minnesota: Native Trees Live

In central Minnesota forest trees in their natural environment have not died to any great extent on account of drought, but have shown surprising resistance, Prof. William S. Cooper of the University of Minnesota reports. In very many cases, top branchlets have been killed. Leaves of all trees are unusually small, and many are curled. The elm seems to have suffered most. Windbreaks on prairies and other planted trees have suffered severely; many are entirely dead. This is the culmination of the effect of several years' drought.

Native perennial plants are universally small and starved in appearance. The general impression is that the number of individuals is less than usual.

Carlos G. Bates, forester at the University Farm, St. Paul, at present in the field near Cass Lake in northern Minnesota, reports that death of trees from drought throughout this region is mostly confined to planted trees. In North Dakota groves have been dying through several years of drought, but principally species not native to the region.

In southern Minnesota and Wisconsin oaks and other native hardwoods

have suffered during the past two years, mostly in pastures. As result of dry winds this spring, white pines, Scotch pines and Norway spruces, all planted trees forty to fifty years old, in the same region suffered very badly, but loss in native trees shows no sharp increase as yet.

Northern Minnesota east to Cass Lake is dry enough to affect young plantations and wither shoots on most hardy shrubs, but losses in native trees affect only those weakened from other causes.

Illinois: "Forced" Wildflowers

Trees in northern Illinois and adjacent parts of northern Indiana and southern Michigan show no effects of the drought, states Prof. George D. Fuller of the University of Chicago. Their foliage is good, and seed of elm and river maple are very abundant.

Spring flowers, such as Dutchman's Breeches, are maturing very rapidly and about three weeks ahead of their ordinary season.

Other woodland vegetation is in average condition except for frost and fire damage. Heavy frost in late May damaged swamp and bog vegetation. Fires in the dune area have been numerous and destructive.

Grassland is suffering somewhat, with plants wilting and turning yellow in prairies and roadside areas. Grasses on the Lake Michigan dunes are normal. During the very hot days flowers have matured with great rapidity. This was very noticeable in the wild crabapple, where the floral display was for a few days only.

At the opposite sides of the true prairie region of the Midwest, Oklahoma and Ohio have "nothing especial" to report about the effects of drought on native vegetation. Glenn C. Couch of the University of Oklahoma wires that in his state both crops and native plants are for the most part not yet seriously affected. Prof. E. N. Transeau of the University of Ohio reports similarly, that "permanent injury of natural vegetation is very doubtful in Ohio."

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The name of the Bureau of Standards, in the Department of Commerce, has been restored to its original form, the "National Bureau of Standards."

Temperature for the next 24 hours can be forecast accurately four out of five times for certain sections of California, says a Weather Bureau scientist.



TRICERATOPS

PALEONTOLOGY

Harvard Exhibits New-Found Triple-Horned Dinosaur

THE HUGE skull and jaws of a newly discovered type of triple-horned dinosaur, a monster four-legged and dragon-tailed reptile which grazed in the lowlands of eastern Wyoming more than 60 million years ago, has just been placed on exhibition at the Museum of Comparative Zoology at Harvard University.

The skull is 58 inches in length and 53 inches in width, and is believed to have been part of a dinosaur estimated about 18 feet long and 10 feet high. Technically known as *Triceratops eurycephalus*, (wide-headed), the reptile represents the last recorded survivor of that great group known as Ceratopsians.

This rare and important specimen was discovered in Wyoming in 1930 by Erich M. Schlaikjer, who at that time was on field research for the museum. The find has not been previously made public. Mr. Schlaikjer is now on the faculty of Brooklyn University, Brooklyn, N. Y.

The specimen was found in an exposure of variegated Cretaceous shales, sandstones, and sands rising 56 feet above the waters of Horse Creek near

Torrington in southeastern Wyoming. The outstanding feature of the dinosaur is the tremendous breadth of its skull in relation to the length of the skull.

All known individuals of Triceratops are from North America and eastern Asiatic deposits, having lived in the late Cretaceous period which ranged from 60 million to 105 million years ago. The head of the reptile had a frill of bone spreading out over the neck of the skull proper, similar to a collar, which afforded protection against the carnivorous animals which lived in that period.

The Triceratops also had two brow horns, a short nasal horn, a powerful beak, small teeth, hind legs shorter than the front legs, four toes on each foot, and a long, heavy scaly tail. The brow horns of the specimen to be placed on exhibition are exceptionally long, while the nasal horn is shorter than average. The other skeletal remains indicate that the Triceratops was almost as large as other members of this family, but more slender-bodied and probably more agile.

These dinosaurs, which were larger

than any mammals that have ever lived, except whales, once roamed the eastern uplift of the Rocky Mountains, from Alberta to New Mexico, becoming extinct about 60 million years ago. Paleontologists assign their demise to disease, or change in climate, or to the possibility that mammals devoured the dinosaur eggs.

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ARCHAEOLOGY

Famed Altar to Zeus Discovered on Island

GERMAN archaeologists, working with permission of the Greek government, have discovered the sought-for altar of Zeus on the mountain of Aegina, famous in Greek myth.

Tradition said that a son of the god Zeus once begged his father to send rain to relieve a dreadful drought in the island of Aegina. Zeus sent rain, and the thankful people erected an altar to him on the mountain top. The mountain became famed as a weather prophet, and it is still said that when the peak is clothed in clouds, there will surely be rain.

At some unknown time, the people of Aegina moved the altar to Zeus to a new place, about 330 feet down from the summit. Here the excavations have been made by a former German minister to Athens, Rudolf von Kardorff, and a German archaeologist, N. Welter.

The excavators had only a brief mention of the altar by the Greek traveler Pausanias to guide them in classic literature, and no mention of it from medieval writings. Wars upon wars have stormed over the island, and the Turks destroyed all tradition. The visible clue to the site was a remnant of antique wall.

The altar discovered on the mountain is from the fifth century B.C. The antique walls prove to be a temple of the Greek-Pergamon period, second century B.C. A great monumental stairway has been found, dividing the building into two unequal parts. Up this stairway processions to worship Zeus must have mounted. The columns and decorations were of a local stone, less durable than the materials of walls and stair, and only one capital of a column has survived the centuries.

The view from the terrace where the Greek worshippers stood is pronounced marvelously beautiful, looking across isles of the sea to Athens and the plain of Attica.

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CHEMISTRY

Rare Argon Gas Found in Distant Stars

ARGON, the same gas that produces the pale, pinkish hue in the common advertising signs, has just been discovered in the atmosphere of distant stars by Dr. W. W. Morgan of the Yerkes Observatory of the University of Chicago.

Using the great 40-inch telescope of the Observatory to catch starlight which has taken years to reach the earth, Dr. Morgan passed the rays through a spectrograph and identified argon as one of the gaseous elements in the atmosphere of the star called Upsilon Sagittari.

Argon is one of the "lone-wolf," or inert, gases found on the earth, so-called because it avoids combination with atoms of other elements. It was first discovered by Lord Rayleigh and his colleague Ramsey in 1894 in the air.

The finding of argon on the earth before it was found on the other bodies in the universe recalls the reverse case where the British astronomer Lockyer discovered the gas helium on the sun long before it was isolated on the earth.

Science News Letter, June 16, 1934

MEDICINE

Infantile Paralysis Threatens Big Outbreak

THE BIGGEST infantile paralysis epidemic since 1931, the year of the second largest outbreak in history, is threatening the country's health. Reports received by the U. S. Public Health Service at Washington, D. C., show a large weekly increase in the number of cases and a greater total than was reported at this time in 1931, when that year's epidemic had already gotten under way.

The outbreak this year has centered in Los Angeles and vicinity. Of the total of 179 new cases reported for the country as a whole for the week ending June 2, 163 were reported from California. For the previous week there were 118 cases reported from the whole country with 92 of them in California.

Health officials can not yet tell whether this year's outbreak will spread throughout the country and reach the proportions of the 1931 or 1916 epidemics. No better means of protection against the disease are available now than at the times of the previous out-

breaks. Parents are warned to keep their children away from crowds where the danger of exposure is greatest, and to watch for symptoms of slight illness or indisposition so as to catch the disease in its early stages when treatment is most effective. New methods of treatment have improved the chances of not only saving the life of the infantile paralysis patient, but of warding off the paralysis and crippling deformities which were nearly universal sequels to the disease in former years.

In California blood serum from recovered patients is being used in the hope of giving protection against the disease.

Science News Letter, June 16, 1934

PSYCHOLOGY

Too Fast Feeding May Cause Thumb-Sucking

ANURSING bottle allowing the milk to flow too freely may be the reason why an infant forms the habit of thumb-sucking. Babies seem to need to suck a certain amount; if they get their food before the desire to suck is satisfied, they will use the finger or something else to suck on.

Puppies taken from the mother dog and artificially fed developed sucking habits when they were allowed to get their food rapidly without a long period of sucking for it. The experiment, which was made on four collie dogs out of a litter of six, was reported by Dr. David H. Levy, a physician of New York, to the *American Journal of Orthopsychiatry*. It confirms his interpretation of why human babies become thumb-suckers.

One pair of the dogs sucked from bottles with small-holed nipples and after feeding were given supplementary sucking on the examiner's finger covered with a nipple. The second pair were fed from bottles having large-holed nipples. The third pair, for comparison, were left at the breast.

The rapid-eating pair learned to suck at each other or at various parts of their own bodies. When changed to solid food these "thumb-suckers" would eat more slowly and oftener and would lick the dish longer after eating than the other dogs.

Dogs fed on the breast were consistently much heavier than the others, and the slow feeders were heavier than the short-time feeders.

Science News Letter, June 16, 1934

IN SCIENCE

MEDICINE

Tonsils Sometimes Useful, Medical Authority Says

TONSILS appear to be part of the mechanism by which the body defends itself against disease during infancy and childhood, Dr. Lee Wallace Dean, professor of otolaryngology at Washington University Medical School, St. Louis, pointed out at the meeting of the American Medical Association.

The question of whether to take them out or leave them in consequently depends on whether the good of their natural function is overbalanced by the infection that may be located in them. No definite rules can be given on the subject of removing them. Each case must be decided on its own merits.

Enlargement which interferes with breathing, disease, acute tonsillitis and toxic malnutrition are some of the indications for removal, Dr. Dean said.

Science News Letter, June 16, 1934

ARCHAEOLOGY

Fabled Gold Unearthed Mistaken for Brass

SOME of the fabled gold of which the Niebelungenlied sings, worn by the German Burgundians 1,600 years ago, has been unearthed by workmen near Cottbus in eastern Germany. The find consists of five large rings of gold worn on the upper and lower parts of the arm and the neck.

The men who first examined the rings mistook them for brass, and pronounced the plainer rings to be coffin handles.

The State Prehistoric Museum of Berlin was immediately notified of the discovery, and Dr. Marschallck has directed wider excavation of the site to see whether a burial was once there. Not finding one, it is concluded that the owner of the gold hid his treasure, perhaps from an enemy. The rings are of pure gold, weighing together 865 grains. They thus constitute one of the most important gold finds in recent years in Germany.

Science News Letter, June 16, 1934

ICE FIELDS

MEDICINE

British Journal Praises Dillinger Physician

DOCTOR Clayton May of Minneapolis is praised by the editor of *The Lancet*, British medical journal, for not informing the police of the whereabouts of the escaped Indiana convict, John Dillinger, when the latter came to Dr. May as a patient.

Dr. May was fined and sentenced to prison for this act, and an appeal is now pending.

The editorial in *The Lancet* contends that there was only one question for Dr. May: "Did Dillinger come to him trusting in professional honor?"

The answer is obvious, this medical journal states. Dr. May's colleagues in every country, the editorial contends, will applaud his action in not betraying his professional trust.

Science News Letter, June 16, 1934

ENGINEERING

Diamonds and Carboloy Combined in Cutting Tools

CARBOLOY, hardest metallic substance, and diamond, hardest of all substances, have been brought together to form an improved combination for cutting tools, grinding wheels, and any other process which requires sharp, lasting edges.

A method has been found of burying chips of diamond in carboloy which has greatly increased the demand for the small and imperfect stones that used to be of little cash value.

Carboloy itself, a substance composed of tungsten carbide, a compound of tungsten and carbon, and cobalt, a metal like nickel, since its invention in 1928 has been used as an abrasive because of its extreme hardness.

It has been found that by mixing it in its powdered form with fragments of diamond and heating to a temperature below the melting point of the metallic substance and safely below the temperature at which diamond turns to graphite, the two join together. The diamonds are bedded so tightly in the matrix of

carboloy that they cannot be loosened when the new substance is used in drills or grinding wheels.

The use of diamonds as a machine shop abrasive and in drilling tools seems fantastic, but, it is pointed out by George F. Taylor, research physicist in the General Electric Laboratories at Schenectady in charge of the work on carboloy, over \$4,000,000 worth of commercial diamonds are used by industry yearly.

Science News Letter, June 16, 1934

EUGENICS

Morals More Important Than Intelligence

OUR vaunted intelligence is not so important in keeping the human race alive, after all. At least, so we are told by a physician who looks at the matter biologically.

This physician, Dr. C. G. Campbell of New York, has weighed and appraised the importance of four psychological factors so far as human survival is concerned. What his verdict is, he announced before a scientific group especially interested in the problem of human destinies, the Eugenics Research Association.

The four psychological factors which are important to the survival of races of man are named by Dr. Campbell as — listing them alphabetically — intelligence, moral, religious, and temperamental factors. How would you arrange them in importance?

We set such store by superior brains, in our modern civilization, that Dr. Campbell believes there would be a general inclination to put intelligence first. But his own conclusion is that moral traits are far more valuable biologically than intelligence. The powerful moral drives and urges in a man are back of his sense of duty and obligation to his fellow men. Moral traits impel individuals to fulfill their obligations to their racial group, and thus help safeguard its survival.

"Close upon the moral factor follows the religious factor," as Dr. Campbell continues his ranking.

Both moral and religious factors go to support those temperamental qualities in individuals that will be helpful to the survival of their racial groups.

And intelligence? Dr. Campbell says: "Last of all intelligence goes to secure and to augment the best results of these other factors."

Science News Letter, June 16, 1934

FORESTRY

Fungus Disease Menaces New England Beech Trees

THE AMERICAN beech may follow the way of the chestnut and succumb to an imported disease, warns Dr. R. Kent Beattie of the U. S. Department of Agriculture.

The new disease, Dr. Beattie states, was introduced from Europe and has already killed off more than a third of the beech trees of Nova Scotia and many in New Brunswick. The fungus that causes it is abetted by an insect working in partnership.

In the United States, the malady has already been found killing trees in Maine, warns Dr. Beattie. The insect, known as the felted beech scale, occurs not only in Maine, but also in New Hampshire and Massachusetts. The disease has not been reported yet from these last two states.

According to Dr. Beattie, control or eradication measures must for the time being wait on further studies.

Science News Letter, June 16, 1934

DENTISTRY

Radio is Latest Aid To "Painless" Dentistry

AN APPLICATION of Dr. Hugo Lieber's discoveries on the bone conduction of sound, has been adapted for use in dentistry to counter-balance the painful effects of drilling, by Dr. Edward Drosen, a Milwaukee dentist.

Dr. Drosen asserted that by clamping a radio earphone, which is connected to a fairly high-powered radio, onto the forehead or onto the mastoid bone back of the ear of a patient, the unpleasantness of a dentist's drilling activities is largely removed.

The radio earphone plates vibrate musically and communicate this vibration to the bones of the head, and the rhythmic vibration so afforded serves as a counter-agent for the vibration which results from the dentist's drill, Dr. Drosen said.

This latest device, together with "topical" or surface anesthesia and nerve blocking anesthesia, makes possible almost completely "painless dentistry," Dr. Drosen asserted.

Dr. Lieber is well known for his studies on bone conduction of sound and the application of this to aids for the hard-of-hearing.

Science News Letter, June 16, 1934

PHYSIOLOGY

Growths of Fancy

The Photographer's Skill in Producing Illusions Gives Us a Glimpse of a World that Cannot Really Be

By DR FRANK THONE

See Front Cover

ROMANCERS with a modicum of training in science and much more than a modicum of imagination have for many years made a favorite theme of the situation where insects, or spiders, or other "little monsters of the world of grass" have suddenly grown to human or superhuman size, bringing up with them, correspondingly magnified, the strength, the appetite, the fierceness, the other qualities that so impress us when we see them "in the little." Thus a man-sized ant drags off a string of freight cars. A man-sized spider devours half-a-dozen cows. A man-sized pinching-bug routs a company of soldiers. H. G. Wells in his earlier stories, like "Food of the Gods" and "War of the Worlds" did this kind of thing very well; he had plenty of forerunners and has had plenty of successors.

Such writers always leave out of consideration, sometimes naively, sometimes deliberately and for effect, one or another group of physical limitations that make such awesome, often gruesome, miracles of "unnatural history" impossible in actual fact.

Evolution Makes Greater

As well for us that the little monsters can not grow to be big ones, for they probably would if they could. The whole trend of animal development seems to be toward greater and greater size, so long as a species is evolutionarily on the up grade. Only after a given line has reached its climax and started toward extinction do its members take the reverse road, back toward dwarfism. Not always even then: did not the dinosaurs die as giants, and are not the elephants doing the same thing? If the bumblebees and the tumblebugs could travel that course they would most likely, even if their end were destruction.

Why is it that the insects and the spiders and the other creeping things do not grow up to our size and thus conquer the world in a few days, instead of the centuries or millenia grant-

ed them by such scientific prophets as Dr. L. O. Howard? Why is such a scene as that depicted by the man-versus-spider photograph reproduced on the cover forever impossible? Why must our tiny enemies conquer us (if they finally do it at all) by swarming over us in hordes, devouring our substance by billions of tiny hungers instead of a few big ones?

There are several answers to these questions that we know of, and possibly a good many more that we don't.

Skeletons Outside

To begin with, the basic anatomical plan of the insects and their many-legged kin is not one that permits of indefinite expansion. We vertebrates wear our skeletons inside our bodies, which has permitted us a range in sizes from little shrews and hummingbirds that are actually smaller than some insects, up to Goliaths like the extinct dinosaurs and the living whales. As we pile on muscle and fat and other tissues, our skeletons develop in proportion to support them. But the insects and their relatives wear their skeletons on the outside: the horny shells we see are skeletons as well as armor. An insect's muscles are stretched *inside* its hollow joints, not over the *outside* of practically solid rods of bone, as with us.

Every increase in an insect's size has to be gained by a much larger proportion of its weight devoted to this outer shell-skeleton, if its strength is to be maintained. For the bigger a hollow shell is the weaker it is, unless you increase its wall-thickness. It is easy, for example, to crush a large celluloid rattle or play-ball; much less easy to crush a ping-pong ball.

The few backboneed animals that have made the mistake of putting on an outside shell, like turtles and armadillos and medieval knights, afford excellent examples. They are all slowed down badly by the loads they have to carry, but the bigger they are the greater the load, not merely in absolute poundage but also in proportion to their strength. The little box tortoises can get around

on land all right, but their enormous relatives, like those of the Galapagos islands, are better off in the water, where some of the load is buoyed up and taken off their muscles. The giant armadillos, the glyptodons, gave up the job long ago and became extinct; only their smaller kin-animals lived on and are still with us.

Weight Limits Size

Slim Prince Hal could case himself in plate armor and still swing a heavy sword, but poor fat Falstaff would have had much ado just to support the steel tonnage that would have been required to encompass his huge girth, even if he could have plucked up courage enough to follow his Prince into battle. So the weight of the shell alone, that is at once support and protection for the insect's body, puts a limit to its possible increase in size.

The limit becomes emphasized when the shell is lacking, as it is on the belly of the spider shown in the fanciful combat depicted on this week's SCIENCE NEWS LETTER by Lynwood Chace, nature photographer. Most of the spiders (which of course are not insects) have shell-skeletons only over their legs and head-chest region. The big abdomen, which must be left free to expand as the crop of eggs matures, is covered only with a relatively thin skin. It is kept in shape mainly by the internal pressure of its contents, like a ripe gooseberry.

But this is not even equal to the external-skeleton arrangement as a means of supporting a really large body.

To go back again to fat Jack Falstaff: think of the woes that poor mountain of mendacity had with his overstuffed, pampered paunch! And even at that, it was partly held in a basket of bone—his pelvis—and set on two thick legs good enough to carry it out of danger in a hurry. What luck would he have had getting away from his imaginary nine foes in buckram if he had had to drag the thing on the ground behind him, like the spider in the picture?

As a matter of fact, these round-bellied spiders do have a lot of trouble, even at their present size, if they find themselves on the ground. They are much happier in their webs, where their "corporosities" are clear of obstacles.

This whole matter of the contrasting methods of body support—internal for vertebrates, external for invertebrates—insures that "never the twain shall meet" on the field of equal size. For as the external-support system prevents the insects and other creeping things from becoming very large, so the internal-support system keeps the boned animals from becoming very small. Hummingbirds, mice and shrews are about as tiny as animals can be and still have strong enough internal skeletons to support them. Any bones smaller than a hummingbird's would have to be made of something besides bone (aluminum, maybe?) to have the needed strength. We hear of the giant water-bugs killing small fish and frogs, of giant tropical spiders that murder small birds; but aside from exceptions like these we are not likely to have our blood chilled by any such encounters, so unnatural-seeming to us. Only the giants of the small world can overcome even the tiniest citizens of the large world.

Lack of Breath

Another factor in keeping the small creatures small would be sheer lack of breath. Falstaff (again!) puffed and anted enough after any exertion to which he was forced. But like all other vertebrates (for he had a vertebral column as well as an abdomen, even if Shakespeare will allow him neither "backbone" nor "guts") he had a good pair of lungs, and red blood corpuscles to carry the oxygen from them to every cell of his huge body. But insects, spiders and the like do not have lungs. Insects have air-tubes that open through rows of little holes along their sides. These tubes branch out through all parts of their bodies, carrying the air directly to the tissues. Any increase in the thickness of an insect's body would greatly magnify the difficulties inherent in this primitive method of oxygen transport. Even in the Coal Age, when there were giant dragonflies a foot long, the bodies of these winged terrors were no thicker than a lead pencil. Spiders' breathing-arrangements are quite as primitive, so that they are in no better position than the insects to grow to superhuman size and terror-inspiring rapacity.

But even though such extremes cannot come to pass without reversing some of the fundamental laws of physics and physiology, there are plenty of instances within both the little and the large worlds of animals where the customary



"WHEN A MAN BITES A DOG"

So also when a frog undertakes to swallow a snake; for it is usually the snake that swallows the frog.

roles of eaten and eater are switched.

We commonly think, for example, of snakes eating frogs. But on occasion a big frog does not hesitate to tackle a small snake. The photograph caught by Lynwood Chace looks rather like a case of a big frog having bitten off more snake than he could chew; but if the snake had been no bigger than a

large angleworm (and plenty of snakes are that small), down like a worm he would have gone. Frogs are cannibals; the big ones eat the little ones whenever they can catch them.

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Science News Letter, June 16, 1934

PSYCHOLOGY

Student of Twins Tells What Quintuplets Can Teach Us

PSYCHOLOGISTS can learn new things from a study of the Dionne quintuplets, says Dr. Frank N. Freeman, University of Chicago professor of psychology. Dr. Freeman has made studies of twins, but has not planned to make a study of the Dionne babies.

"Biologically quintuplets may be any one of several combinations of identical and fraternal twins or quadruplets," Dr. Freeman stated.

This means that they may have come from one fertilized egg, in which case they would all be identical, or from five separate eggs, in which case they would all be fraternal and just like any five sisters born of the same parents. Two of them may be identical and the rest fraternal, or these relationships might be varied in other ways.

"Study of their similarities and differences in the light of the type of their relationship as determined by

biological diagnosis would be valuable," Dr. Freeman said.

It would not be very different from studies of twins, but because of the greater numbers might be three or four times as interesting, it appears from Dr. Freeman's statement.

How would it feel to be one of five sisters all exactly alike? Growing up in the same household, would they all be as alike in thought and feeling as in appearance, or would they develop into five different personalities, or would three of them be alike in this way and the other two different? Would they all want the same toy to play with or would they develop different tastes? These are some of the interesting questions that psychologists might be able to answer after studying the quintuplets, but it would require a long time for the study.

Science News Letter, June 16, 1934

CONSERVATION

Nations Cooperate To Protect Wild Life in Africa

THE UNITED STATES Government has been invited, through Sir Ronald Lindsay, British Ambassador, to accede to the Convention for the Protection of Fauna and Flora of Africa, signed recently at London.

The conference was participated in by delegates from the Union of South Africa, Belgium, the United Kingdom of Great Britain and Ireland, Egypt, Spain, Abyssinia, France, Italy, Portugal, and Anglo-Egyptian Sudan. Under the terms of Article 17 of the convention, permitting the participation of governments not a party to the original agreement, both the United States and Belgium have been invited to accede to the convention.

Under the terms of the convention the participating governments contract to explore the possibility of establishing within their territories national parks and strict natural reserves. National parks are defined as areas "(a) placed under public control, the boundaries of which shall not be altered or any portion be capable of alienation except by the competent legislative authority, (b) set aside for the propagation, protection, and preservation of wild animal life and wild vegetation, and for the preservation of objects of aesthetic, geological, prehistoric, historical, archaeological, or other scientific interest for the benefit, advantage, and enjoyment of the general public, (c) in which the hunting, killing or capturing of fauna and the destruction or collection of flora is prohibited except by or under the direction or control of the park authorities."

Strict natural reserves are areas "placed under public control, throughout which any form of hunting, or fishing, any undertaking connected with forestry, agriculture, or mining, any excavations or prospecting, drilling, leveling of the ground or construction, any work involving the alteration of the configuration of the soil or the character of the vegetation, any act likely to harm or disturb the fauna or flora, and the introduction of any species of fauna and flora, whether native or imported, wild or domesticated, shall be strictly forbidden; which it shall be forbidden to enter, traverse, or camp in

without a special written permit from the competent authorities; and in which scientific investigations may only be undertaken by permission of those authorities."

No Hunting by Airplane

The contracting governments agree, under Article 10, to prohibit in their territories the surrounding of animals by fires for hunting purposes. The following methods of capturing or destroying animals also are generally prohibited: the use of poison or explosives for killing fish; the use of dazzling lights, flares, poison, or poisoned weapons for hunting animals; the use of nets, pits, or enclosures, gins, traps or snares or of set guns and missiles containing explosives for hunting animals. The use of motor vehicles or aircraft for hunting also is prohibited.

Consideration also will be given by the respective governments to the establishment around the borders of national parks and strict natural reserves of intermediate zones within which the hunting, killing and capturing of animals may take place under the control of the authorities of the park or reserve. Efforts also will be made to make all national parks areas sufficient in extent to cover, so far as possible, the migrations of the fauna preserved therein.

Science News Letter, June 16, 1934

ENGINEERING

Car of Future Will Have the Motor at Rear

AUTOMOBILES, having been built along the same general lines for the past 30 years, will show a complete departure from the present designs by 1936, it was predicted by A. Ludlow Clayden, research engineer for the Sun Oil Company.

"Most engineers," he said, "are now convinced that from the time we first began to manufacture automobiles, we have been building them the wrong way around. In other words, the engine ought to be behind."

This would fit in, he pointed out, with the present tendency toward complete streamlining to which the public

is now rapidly getting accustomed. The applause with which this year's models have been greeted show that a blunt-nosed body tapering gradually to a stream-lined back will be the next step, and the obvious place for the engine is in this "tail" compartment.

The advantages of this design are many fold. Engine noise and odor would be almost completely eliminated, and the best part of the car as far as road comfort is concerned, which is directly between the wheels, would be reserved for the passengers.

Independent Wheels

Another advance in design comes with the independently slung wheels. This has worked out well as far as it has gone, but the rear wheels are still on the same axle. When these work independently another long stride will have been taken in increasing travel comfort.

New engine and transmission designs, according to Mr. Clayden, will necessitate different properties in lubricants and fuels. With the engine moved to a new position there will be the necessity to economize on its size, and in order to gain proportionally in power the gasoline used will have to have its octane rating increased from the present figure of around 70. That is, it will have to approach more closely the figure of 100 par for 2,2,4 trimethyl pentane, a fuel chosen by chemists as an ideal standard of anti-knock performance.

Where more engine power is to be applied through smaller working parts, excessive pressure lubricants will be necessary. The 1934 car does not absolutely need high pressure lubricants, but when designs travel toward greater forces and lighter parts, some of the heavy-oil pressure principles will have to be applied to light-oil lubrication.

Science News Letter, June 16, 1934

ENTOMOLOGY

Bees Do Not Work Well After Enforced Travel

BEES do not like travel—especially when man packs them and ships them about the country to work at pollinating fruit trees, states Dr. A. A. Woodrow, apiarist of the New York Agricultural Experiment Station at Cornell University.

Dr. Woodrow found that the bees brought in in packages do not have the colony strength nor do they fly as freely as bees from established colonies.

Science News Letter, June 16, 1934

ARCHAEOLOGY

Scintillating Smiles Linked Ancient Mayas with Zapotecs

ONE OF the anecdotes about Paul Revere tells of his identifying a Revolutionary hero among Bunker Hill's dead by dental work he had fashioned for the man.

Now, archaeologists digging at the mountain city of Monte Alban, in southern Mexico, have unearthed significant dentistry there. By eccentric styles in dental work the Zapotec Indians of Monte Alban proclaim a cultural relationship with the most brilliant of all the ancient Americans, the Mayan Indians in Yucatan.

Monte Alban tombs have given up no recent additions to the spectacular treasure trove of 1931. But they have yielded something shining in the form of human front teeth inset with tiny disks of iron pyrite—fool's gold, the stuff is sometimes called because of its valuable-looking glint. Ancient smiles, Mayan or Zapotec, must have been decidedly flashing with pyrite mirrors for trimming. Never before has this style of tooth mutilation been found outside the Mayan area.

Another Mayan style of mutilated teeth discovered in Monte Alban is that of filing the two front incisors to make a figure T, the distinguishing mark of the Mayan sun-god. Several pottery funerary urns found in Monte Alban this year depict a Zapotecan corn god with T-shaped front teeth.

Bones from fifty-odd Monte Alban tombs explored since 1932 reveal that the Zapotecs also imitated their Mayan neighbors in skull-flattening. Dr. Daniel de la Borbolla, anthropologist of the Mexican National Museum, finds that the eight well-preserved human skulls recovered from the graves were artificially deformed, Mayan style.

These skulls show the Zapotecs to have been broadheaded, as Mayas are today, and this is the first inking of the physical type of ancient Monte Alban's inhabitants.

Dr. Borbolla counts about twenty styles of tooth mutilation and decorations in the archaeological material of southern Mexico. One Monte Alban skull had front teeth neatly incised with fine vertical lines so that the whole

set gave the effect of a fine-toothed comb.

Spanish missionaries wrote that certain Indians filed their teeth like saw points. Landa, monk of Yucatan, said that old women did the work, grinding teeth down by means of stones and water.

There is no proof that Indian "dentists" used anesthetics. Making the T-shaped sun-god incisors must have been painful, as the tooth was cut entirely through. But as the mutilation was apparently religious in its motive, the pain may have been a sacrifice.

Since archaeologists began working at Monte Alban, they have asked how old the place was, what the relationships of the people might be. Recently the sacred ball game of Monte Alban revealed the city's age as a thousand years past. Now, the sacred forms of dentistry point to significant relationship between the city and the leaders in American civilization of that time, the Mayas.

Science News Letter, June 16, 1934

ANTHROPOLOGY

"Race," German Magazine, Promotes Nordic Movement

NORDIC ideas and culture are to be promoted by a new German magazine named "Rasse" ("Race") which has opened offices and begun publication in Leipzig. The new publication is sponsored by the organization known as the "Nordic Ring," and is edited by Dr. M. Hesch, of the Institute for Ethnology and Anthropology in Leipzig. In the list of associate editors appears the names of several non-German scientists, in Vienna, London and the Baltic countries.

"Rasse" announces as its purpose "to carry Nordic ideas to ever-widening circles, and at the same time to gather all Nordic racial strength, so that the effort may again be made to renew our culture out of the Nordic spirit. Absolute scientific dependability and plain, popularly understandable language, will give the publication its stamp.

Science News Letter, June 16, 1934

BOTANY

NATURE RAMBLINGS

by Frank Thone



Poison Ivy

VACATIONERS need only to hear those words of bane, "poison ivy," to have some of the joy taken out of holiday life. Probably no plant that grows in the Western Hemisphere is more dreaded; and indeed few can so thoroughly ruin an outing as this blister-raising, itch-engendering pest.

There is no part of our country really free of it or its equally troublesome relatives, poison oak and poison sumac. There is no poison ivy in the western deserts, to be sure, or out on the wind-swept grass floor of the Great Plains. But there are inviting (and poison-oak-infested) moist canyons in the desert, and cooling (and equally ivy-cursed) timber strips along the slow flat rivers of the plains. It is as pervasive as sin, and if its wages are not identical, it is quite capable of making the wayfarer wish he had fallen into the sin instead of into the ivy.

The plant is strictly American, though it has some poisonous relatives in the Orient, one of which is a source of a lacquer that sometimes makes trouble for sensitive persons. Captain John Smith, traditionally of Münchhausen tendencies, appears to have been the first to describe its effects, and to his credit be it said that he presented an accurate and conservative account. The weed, wrote Pocahontas' protégé, "being touched causeth reddness, itching, and lastly blysters, the which howsoever, after a while they passe awaye of themselves without further harme." Surely, if anything, an understatement!

But perhaps Captain John Smith was not very sensitive to ivy poisoning. Many persons are thus insensitive, and many more appear to be totally immune; though this im- (Turn to Next Page)

munity is never certain

Literally hundreds of remedies for ivy poisoning have been proposed. A few work. Most recommended is a five per cent. solution of ferric chloride, or ferrous sulphate, in water and alcohol; to be washed on and allowed to dry without wiping before one goes into a poison-ivy-infested place. If the poisoning actually develops, it can be oxidized off with the same solution, or with one of potassium permanganate.

Better, though, avoid the plants altogether if possible. Poison ivy is easily recognized. It is either a tree-climbing vine or an erect, sparsely branched shrub, with three-parted, usually notched leaves. The same description holds for its western kinsweed, poison oak. The flowers are in irregular clusters, tiny greenish-white. The fruits, ripening in late autumn, are thin-fleshed white berries.

Poison sumac grows only in acid-water bogs, along with tamarack, pitcher-plants and sundews. It looks like ordinary sumac, which however never grows in such wet places, except that its bark is light gray rather than brownish. It can best be distinguished by its fruits, which persist into the following year. They are drooping loose clusters of white berries, instead of the erect, dense, red-brown fruit-masses of the ordinary sumac.

Science News Letter, June 16, 1934

Physicians who studied 20,000 cancer cases in Memorial Hospital, New York, report their opinion that inheritance is not an important factor in the genesis of cancers among children, with the exception of glioma of the eye.

PUBLIC HEALTH

Chicago Fair Visitors Need Not Fear Dysentery

AMEBIC dysentery is no more of a danger in Chicago now than in any other city in the country, agreed health officials at the Conference of State and Provincial Health Authorities of North America.

Discussion of the outbreak of last summer and fall brought out the following points:

Plumbing is the first line of defense against amebic dysentery.

The Chicago outbreak of amebic dysentery was the first due to infected water that has ever occurred in a civilian population anywhere at any time; the disease has always heretofore been traced to infected food handlers.

Sanitary inspection of plumbing when a building is erected is not enough to protect the public health. Such inspections should also be made at later dates to detect defects that may result from changes in the plumbing system after the building has been in use.

When Dr. Herman N. Bundesen, Chicago's health commissioner, described at the Conference the fight made by the city against the amebic dysentery outbreak, he reported that 660 of the public buildings and hotels in the city had been rigidly inspected and all defects in plumbing corrected.

The plumbing in the Chicago hotel which was found responsible for the outbreak is probably no different from plumbing installed in any building 20

to 30 years ago. Because of this and the fact that five out of every hundred persons in the general population are carriers of amebic dysentery, the disease may break out anywhere at any time.

The disease did not spread throughout the country from the Chicago epidemic, no material outbreaks elsewhere having been traced to Chicago except those cases known to have been contracted in Chicago.

Amebic dysentery is probably a factor in the present increase of cases of so-called appendicitis. Many amebic dysentery cases are known to have been wrongly diagnosed as appendicitis and the mistaken diagnosis probably has not been detected in many more cases.

The dramatic way in which Chicago's health commissioner announced the outbreak to the world through the press and over the radio was termed "one of the most judicious and courageous things any health officer ever did."

Science News Letter, June 16, 1934

AGRICULTURE

Corn Crop Not Yet In Serious Danger

DROUGHT, though confronting the nation with the prospect of the worst wheat crop failure in history, has not yet become seriously menacing to the corn crop. So the U. S. Weather Bureau has stated, as the result of a week's survey of weather and crop conditions.

"In Iowa," the meteorologists state, "the early crop is growing fairly well and being cultivated, but fields are dusty; chinch bugs are destructive in the south. Satisfactory growth is reported from eastern Kansas, throughout the South, and in the Middle Atlantic States."

The optimistic tone of the report, however, is qualified by the statement that over considerable areas a large percentage of the later-planted seed corn is still lying in the dust, ungerminated. In Iowa this includes approximately one-third of the acreage, while in the eastern Ohio valley all late-planted corn is dormant.

Science News Letter, June 16, 1934

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A SLEEPLESS POEM

This poem was written by Mr. Z., apostle of sleeplessness, on the tenth day of his sleepless scientific vigil.

While "obscure at times," the attending psychiatrists say it indicates mental integration and integrity. It constitutes, in their opinion, proof that the lack of sleep did not impair Mr. Z.'s mentality.

Two of the women who assisted in the experiment furnished the inspiration. Here it is:

Functions that hamper and gifts that requite
Must be their nature in women unite.
Reckless compounding of accent with flush
Attacks like a limen, basic in hush
Attacks in the crystal, survives in the light
Recoils and assembles 'twixt mystic and trite.
New fashions go leering, old modesties blare
I comin the springtime, their tortoise shell dare:
Over insistence, and collect what you may,
Evoke pleasures of night to sustain in the day.
Northward the lust and the yearning conspire
Sweet south, how delightful sensed form to attire.

PHYSIOLOGY

Considers Sleep Useless But Proves Himself Wrong

GOING without sleep doesn't seem to be too good an idea and apparently the time spent in sleeping is not such a waste after all.

A young man who was sure that the human race wastes a third of its time in sleep persuaded psychiatrists to let him show how nicely he could get along without sleep. But he seems to have shown the reverse, that he couldn't get along without it after all.

His strange case was reported by Drs. S. E. Katz and Carney Landis of the New York Psychiatric Institute and Hospital to the American Medical Association.

Mr. Z., the healthy, 24-year-old apostle of sleeplessness, went for ten days with only five and a quarter hours' sleep. On the last day he wrote a 12 line poem. His longest nap was an hour and ten minutes. His health was not apparently affected, but the "higher functions of mental life" apparently were, and his disposition seemed to suffer most.

"The general picture was that of a slightly intoxicated individual who has grown irritable, argumentative and occasionally slightly disoriented in time and space," the New York psychiatrists reported, in describing his condition at the end of the test.

In fact, he became so irritable and so convinced that the experimenters were

persecuting him that they decided to end the test, although Mr. Z. was evidently willing to continue it.

The mental changes could not be unqualifiedly attributed to the lack of sleep, the psychiatrists pointed out. They state that the general personality and character of a young man who would undertake such an experiment might reasonably explain the mental disturbances that occurred.

Science News Letter, June 16, 1934

ENTOMOLOGY

Grasshoppers a Scourge Second Only to Drought

GRASSHOPPERS, which have been a menace second only to the drought itself in the Northwest, may receive a check in the Dakotas and Montana through the providential rains that have recently fallen in that country.

W. R. Walton of the Bureau of Entomology explained to Science Service that the hordes of 'hoppers, which have not yet reached the flying stage in this northern part of their range, have been giving a desperate time to farmers and the crops of federal and state scientists who are in the field against them. Poison bait has been spread several times, but the air has been so dry that the moisture soon dis-

appeared from the bait, so that the insects would not eat it.

The rain, Mr. Walton stated, will give the grasshopper fighters a breathing space, and longer time in which to carry on the battle. By improving moisture conditions, it will also probably keep the poison bait in edible condition longer.

The grasshopper situation in the West is very bad this season, Mr. Walton continued; worse, even, than had been expected. Undeterred by rains or anything else to favor man and injure them, they have been swarming in threatening hordes all down the Great Plains country as far as Texas, and thence through the southwestern states over into California. In the southern areas they are already winged.

It is probable that 1934 will be remembered as a bad grasshopper year, as well as a year of unprecedented drought.

Science News Letter, June 16, 1934

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Geophysics

OCEAN WAVES AND KINDRED GEOPHYSICAL PHENOMENA—V a u g h a n Cornish—*Macmillan*, 164 p., \$3.75. Waves are an esthetic joy to the observer with an artistic sense, a mathematical challenge to the physicist. These two apparently irreconcilable aspects of waves are synthesized with real skill in the production of this unique book, which includes such phenomena as waves in moving sand dunes and traveling snowcrests as well as waves in water. The numerous beautifully executed photographic illustrations by the author show him a master cameraman as well as a good scientific observer who knows how to tell what he sees.

Science News Letter, June 16, 1934

Ornithology

THE BIRD KINGDOM—*The Orthovis Co.*, \$2. A companion volume to "The Animal Kingdom" (*See SNL*, Feb. 3, 1934). A number of two-color offset illustrations, based on photographs of the excellent bird groups in the Field Museum of Natural History, are to be viewed through a special binocular screen which produces a three-dimensional effect.

Science News Letter, June 16, 1934

Chemistry

MÉCANIQUE QUANTIQUE ET CHIMIE—G. Allard—*Hermann et Cie, Paris*, 31 p., 8 fr.

Science News Letter, June 16, 1934

Ethnology

THE SWASTIKA: A STUDY OF THE NAZI CLAIMS OF ITS ARYAN ORIGIN—W. Norman Brown—*Emerson Books, Inc.*, 30 p., 25c. A pamphlet of counter-propaganda aimed against the Nazi movement.

Science News Letter, June 16, 1934

Ornithology

FIFTY YEARS OF BIRD MIGRATION IN THE ANN ARBOR REGION OF MICHIGAN, 1880-1930—Norman A. Wood and A. D. Tinker—*Univ. of Michigan Press*, 56 p., 40c. The greater part of this pamphlet consists of phenological records from 1906 to 1930, tabulated.

Science News Letter, June 16, 1934

Biochemistry

ANNUAL REVIEW OF BIOCHEMISTRY, VOL. III—James Murray Luck, Editor—*Stanford University Press*, 558 p., \$5. Biologists and chemists alike have reason to be grateful to Prof. Luck and his associates, who now for the third time have performed the heroic task of

arranging, unifying and compressing into one not-too-thick volume the gist of thousands of separate publications in one of the most rapidly developing of scientific fields. It has been found necessary to omit treatment of some subjects, with a promise to include them in a later volume; such omissions are balanced by the introduction of hitherto untreated topics, e.g., a section on Energy Factors, in the chapter on Nutrition.

Science News Letter, June 16, 1934

General Science

TOURS THROUGH THE WORLD OF SCIENCE—William T. Skilling—*McGraw-Hill*, 758 p., \$1.70. A high school course in general science is presented on the analogy of a number of automobile trips, each chapter a "tour." The fiction is maintained by typographical and page-decoration devices, quizzes take the form of "telling about the trip," etc.

Science News Letter, June 16, 1934

Economics

ECONOMIC HISTORY OF THE SOUTH—Emory Q. Hawk—*Prentice-Hall*, 557 p., \$5. There is a tragic parallelism between the history of the American South, pivoting about 1861, and that of the whole Western civilization, with its turning-point at 1914: the upbuilding of a high degree of civilization, beneficial, however, principally to an owning oligarchy; its challenge and overthrow by newer forces; afterwards, long prostration, and slow and never-quite-completed recovery. The present book tells the economic story of the South; the world, apparently groaning toward a renewal of the later war, might well pause to read.

Science News Letter, June 16, 1934

Geology

OUTLINES OF PHYSICAL GEOLOGY—Chester R. Longwell, Adolph Knopf and Richard F. Flint—*Wiley*, 356 p., \$3. This book covers the same ground as an earlier work, *Physical Geology*, by the same authors, but in briefer and somewhat more simplified form. New illustrations and block diagrams have been added.

Science News Letter, June 16, 1934

Ornithology

A SYSTEMATIC CLASSIFICATION FOR THE BIRDS OF THE WORLD, REVISED AND AMENDED—Alexander Wetmore—*Smithsonian*, 11 p., free. A thin pamphlet, but indispensable to scientific students of ornithology.

Science News Letter, June 16, 1934

Travel

ROAMING AMERICAN PLAYGROUNDS—John T. Faris—*Farrar and Rinehart*, 331 p., \$3. A breezily written book of suggestions for the travel-minded American who wants to do his wandering "at home." Ranging as it does from sea to mountaintop, from Maine to Hawaii to Alaska, it offers plenty of mileage opportunity.

Science News Letter, June 16, 1934

Agriculture

SYNOPSIS OF FEDERAL PLANT QUARANTINES AFFECTING INTERSTATE SHIPMENTS IN EFFECT JANUARY 1, 1934—*Govt. Print. Off.*, 135 p., 10c.

Science News Letter, June 16, 1934

Astronomy

ELEMENTS OF ASTRONOMY, THIRD EDITION—Edward Arthur Fath—*McGraw-Hill*, 360 p., 8 star charts, \$3. Prof. Fath's book appears to have earned for itself a place in that Valhalla of books, a teaching classic. It keeps the clarity and good order of the earlier editions, and of course adds accounts of the newer discoveries in astronomy to bring its contents up to date.

Science News Letter, June 16, 1934

Paleontology

REVISION OF ALEXANDER WINCHELL'S TYPES OF BRACHIOPODS FROM THE MIDDLE DEVONIAN TRAVERSE GROUP OF ROCKS OF MICHIGAN—G. M. Ehlers and Virginia Kline—*Univ. of Michigan Press*, 20 p., 4 pl., 35c.

Science News Letter, June 16, 1934

Biology

EQUILIBRE DE MEMBRANE—N. Marinresco—*Hermann et Cie. Paris*, 66 p., 15 fr.

Science News Letter, June 16, 1934

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